

Amendments to the Claims:

This listing of the claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1 (Currently Amended): A fuel cell comprising:

an electrode structure including a cathode, an anode and an electrolyte between the cathode and the anode;

a fuel gas passage configured to conduct fuel to the anode;

an air passage configured to conduct air to the cathode;

a separator configured to supply the fuel to the fuel gas passage; and

a pure water channel configured to allow flow of pure water and permit the pure water to pass into the separator, the pure water channel including polymers respectively having polymer chains, one end of the polymer chains being connected to [[a]] an inner surface of the pure water channel and capable of forming an entanglement among themselves.

2 (Previously Presented): The fuel cell of Claim 1, wherein the flow of the pure water in the pure water channel is stopped when the fuel cell is shut down, and pure water flows in the pure water channel when the fuel cell is operated, and the entanglement of the polymer chain is broken up by the flow of pure water.

3 (Previously Presented): The fuel cell of Claims 1 or 2, wherein the polymer chain is hydrophilic.

4 (Previously Presented): The fuel cell of Claim 3, wherein the polymer chain includes a continuous alkyl group.

5 (Previously Presented): The fuel cell of Claim 1, wherein the polymers are a thermo-responsive and capable of volume phase transition in accordance with a temperature of the pure water.

6 (Previously Presented): The fuel cell of Claim 5, wherein the thermo-responsive polymers contract in water at temperatures of 40°C or higher, and expand in water at temperatures of 20°C or lower.

7 (Previously Presented): The fuel cell of Claim 6, wherein the polymer chain includes N-isopropyl acrylamide.

8 (Currently Amended): A fuel cell comprising:
an electrode structure including a cathode, an anode and an electrolyte between the cathode and the anode;
a fuel gas passage configured to conduct fuel to the anode;
an air passage configured to conduct air to the cathode;
a separator configured to supply the fuel to the fuel gas passage;
a pure water channel configured to allow flow of pure water and permit the pure water to pass into the separator, the pure water channel including polymers respectively having polymer chains, one end of the polymer chains being connected to an inner surface of the pure water channel and capable of forming an entanglement among themselves; and
a means for discharging the pure water in the pure water channel to outside of the fuel cell when the fuel cell is shut down.

9 (Previously Presented): The fuel cell of Claim 8, further comprising:

means for measuring a parameter selected from the group of the flow rate of pure water flowing through the pure water channel of the fuel cell system and the pressure of the pure water; and

means for controlling the parameter so as not to exceed a level.

10 (Previously Presented): A method of operating a fuel cell having a water channel with a polymeric material contained therein and a separator for supplying fuel to the fuel cell, the method comprising:

permitting water to flow through the channel and pass into the separator when operating the cell; and

holding the water in the polymeric material when the cell is not operating.